

REMARKS

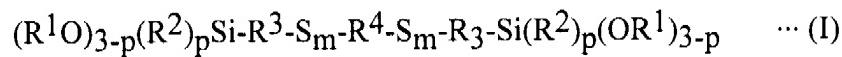
Claims 1 and 3 have been amended. Support for amended Claims 1 and 3 can be found on page 5, lines 23-24. Entry of this Amendment is respectfully requested. Claims 1-21 are pending.

Response to Claim Rejections Under § 103

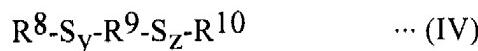
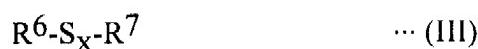
Claims 1-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Scholl et al (US 5,663,226, cited on IDS dated 12/3/2004). Applicants respectfully traverse.

Present Claim 1 recites:

A rubber composition which comprises, per 100 parts by mass of a polymer, 10 to 200 parts by mass of silica and 1 to 30 parts by mass of a silane compound having sulfur atom represented by average structural formula (I):



wherein R¹ and R² each represent a hydrocarbon group having 1 to 4 carbon atoms, R³ represents a divalent hydrocarbon group having 1 to 15 carbon atoms, p represents an integer of 0 to 2 and m represents a number of 1 or greater and smaller than 2, which may be an average of numbers and R⁴ represents a divalent functional group represented by one of following general formulae (III) to (IV):



wherein R⁶ to R¹⁰ represents a linear or branched divalent hydrocarbon group having 1 to 20 carbon atoms, a divalent

aromatic group or a divalent organic group having a hetero atom which is not sulfur atom or oxygen atom, R⁶ to R¹⁰ may represent a same group or different groups, and x, y and z each represent a number of 2 or greater and smaller than 4, which may be an average of numbers.

According to the present invention, x of S_x, y of S_y or z of S_z is larger than m of S_m, such that S_x, S_y or S_z in the center portion of the compound selectively separate as compared with S_m.

In contrast, Scholl discloses in formula (I), a plurality of S_x, which have the same sulfur chain length and a large number of "x" (e.g., 4, as described in Examples 1 to 5). Thus, when x is 1, there are only C-S linkages, and the bond dissociation energy of the C-S linkages is so large that the coupling ability of the compound of formula (I) is significantly lowered. Further, when x is larger than 1, each of the plural S_x in the compound of formula (I) has the same possibility of -S-S- bond scission, which results in shorter Mooney scorch time.

Accordingly, the Mooney scorch time and the physical properties of the rubber composition of the present invention can be controlled much more easily than that of a rubber composition described in Scholl.

As to Claim 13, R⁵ is restricted to a decylene group, phenylene group or methylphenylethylene group. In contrast, Scholl discloses an ethylene group, a hexylene group, a p-xylylene group and melamine-ring derivative residues.

In addition, the rubber composition of Example 2 (which is within the scope of Claim 13) demonstrates a much lower Mooney viscosity, a much longer Mooney scorch time, a much higher Elongation at break and better Abrasion resistance than those of the rubber compositions of Examples 3 and 4, which represent comparative Examples not within the scope of Claim 13

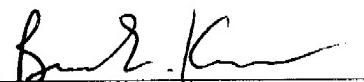
(since R⁵ represents a hexylene group, which is one of the groups disclosed in Scholl). Further, the rubber composition of Example 2 demonstrates a much lower Mooney viscosity, a much higher Elongation at break and better Abrasion resistance than that of the rubber composition of Example 1 (in which R⁵ represents a hexylene group).

Accordingly, Scholl fails to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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